The Challenging Field of Engineering Writing and Speech*

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I WAS pleased and honored to be asked to deliver a keynote address at the first meeting of the Professional Group on Engineering Writing and Speech, and only business of the most urgent kind could have called me away. I have, however, tried to put what I wanted to say in black and white, and I hope that the spirit of my remarks will reach you even if my voice is missing.

I think that few things are more important to the engineer than the ability to write and speak clearly. It is largely through what a man says or through what he puts down on paper that we can judge his thoughts and his contributions. Sometimes things which are really good and important can be obscured through being badly expressed. It is very hard to tell sloppy thinking from sloppy writing, and at times the two may be almost the same thing. Writing or speaking clearly is not a matter of decorating one's ideas with nonessential frills.

Yet, however important effective writing and speaking may be, they are certainly neglected in the usual college training. I have met many people who seem almost unable to give an account of the important things that they have done. Sometimes, when they are able to describe their work in words after some fashion or other, they can do so only through an inordinate expenditure of time and labor. This makes them unwilling to write or to speak. If their work is outstanding enough, or if their bosses are understanding enough, this may not hurt them, but there is always the possibility that their contribution may be unrecognized because no one will take the trouble to find out what they have accomplished.

Experience shows then that many people cannot put their ideas into intelligible words or that the effort of doing so is so great that they simply don't. Yet writing and speaking can go a great deal beyond mere intelligibility. There is a vast difference between things that one can read and things that can be read painlessly, or even with pleasure. In this connection we are apt to believe that a great deal of the difficult and unattractive traits of the engineering papers and presentations come about through bad standards set by technical journals and meetings. I remember Si Ramo telling the story of his unsuccessful efforts to get a joke into "Fields and Waves in Modern Radio." The censorious supervisors of the great corporation for which he at that time worked at first insisted on taking out the joke entirely, but, after due protest, they left half of it in. Whether this had any point or not I do not know, but sometimes I feel that I would like to see even a half a joke in the PROCEEDINGS OF THE IRE.

Undoubtedly, dull, stuffy, and yawn-producing writing is the rule in technical literature, but I think that this is so largely because those who write for technical journals have nothing better to offer and no legitimate grounds for protest. If engineers are repelled or bored by what they find it necessary to read, they have only themselves to blame. They should do something about it.

Some engineers and scientists do. I admire the fluency with which Dr. Isaac Asimov of Boston University expresses his ideas. Besides books on biochemistry, he has written more science fiction novels and short stories than most full-time writers. Certainly this has enabled him to write with an ease that few today who have anything to say attain. Such easy writing need not be empty, and it is so ordinarily only because the people who indulge in it have no technical training.

I myself find that I have acquired something of a reputation as a science fiction writer, largely among those who know nothing about science fiction. Actually, I have had published only seven stories and perhaps a couple of dozen popular articles in one place or another. This output represents an interest in writing which I once felt to be somewhat frustrated. In the last few years I have awakened to the fact that it is only through writing that one learns to write, and my practice has given me a certain facility with words which I have been able to put to good use in writing and speaking about professional matters.

It has come to seem to me that being able to write is just like being able to walk or to swim or to ride a bicycle. Walking is a problem to a baby and learning to swim or to ride a bicycle can be tasks involving alarm and confusion even for an adult. Granted practice and skill, however, these accomplishments become automatic, so that we can think and admire the view as we are traveling along. It is, I think, the same way with writing. With enough practice we can learn to concentrate on what we want to say, and the words will take care of themselves. Without this practice we may lose sight of what we wish to express in trying to get the words down on paper.

I don't want to give the impression that I am the only person who has recognized the importance of good technical writing. In recent years a lot of attention has been given to writing and speech. I am sure that the various universities and colleges are fully conscious of this need. Some of them have courses in technical writing, and most of them have a program in the humanities which involves a certain amount of writing. I merely question, from my

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observation of professional men, the effectiveness that such programs have had in the past. Perhaps this all goes back to a lack of effective teaching in grammar schools and high schools, but this is a confused problem about which I could offer little that is constructive.

The need for good writing has been brought home to people in connection with the preparation of both popular accounts of engineering and scientific advances, and of the clear and readable technical manuals which are required in increasing numbers, especially concerning military equipment. There is a considerable group of professional writers in each of these fields, made up of men who must know a good deal about writing and quite a lot about engineering and science. They have their own societies through which they exchange views and endeavor to advance their arts. Some members of the IRE belong to one or the other of these societies.

Up to the present, however, the IRE as such has not shown an organized and effective interest in the problems of writing and speech. Now, a number of members have chosen to found the Professional Group on Engineering Writing and Speech, and I am trying to find appropriate words to express my thoughts concerning this new development in a field which, as you can see, I have always regarded as highly important.

The IRE Professional Groups go back to a time in March, 1948, when the Board inaugurated the Professional Group system. I am sure that at the outset no one could clearly visualize the scope and importance that the Professional Groups would assume. Now a count in the PROCEEDINGS tells me that there are 24 Professional Groups, and I know there must be 25, for yours rounds out the number to a quarter of a hundred.

I cannot say that I am familiar with the activities and publications of all of these Professional Groups. When I was editor I received all their TRANSACTIONS and found that I certainly could not read them all. This is as it should be. The Professional Groups are a manifestation of the breadth and scope of the IRE, which embraces related fields of study and activity so various that no man can be expert in all. No one, I think, can, or at least does, read all of even one issue of the PROCEEDINGS with adequate appreciation and understanding. This need not be true, however, in the case of the publications of the Professional Groups.

The pattern of the Professional Groups is not yet clear. Some seem to be more effective or important or successful than others. While no general pattern of activity has emerged, certain of the Professional Groups have been successful in a clear and undeniable way. I think that we can say of the Professional Groups on Information Theory, on Circuit Theory, on Electron Devices, and on Antennas and Propagation, to choose only a few examples, that a large majority of those interested in each of these fields belongs to the appropriate Professional Group and receives and values its TRANSACTIONS. Thus, certain of the Professional Groups have achieved the status of the leading society in an important field without suffering the financial and organizational problems that an independent society would face, either in its formation or in its continued operation. Such Groups have the dignity and merit of a leading professional society, and the added dignity and merit and benefits derived from being a part of the IRE.

This is only a part of the Professional Group story, however. It is doubtful whether some Professional Groups can ever hope to have in their membership substantially all of the people who are in any way interested in the field of the Group, as the Groups I have discussed do. The course, program, and value of a Professional Group embracing substantially all of the people interested in its field of activity are simple and clear. The proper course for a Professional Group in a field in which there exist other activities and organizations is not so easy to determine. Problems are bound to arise concerning the scope of the Group's activities and concerning relations, both individual and organizational, with other organizations whose activities are related to it through field of interest only.

Certainly, the Professional Group on Engineering Writing and Speech is representative of as important a field as there is in modern engineering and, indeed, in modern life. It is a field which is important not only in radio engineering but in all science and technology, and, indeed, the need for clear writing and clear speaking transcends the bounds of technology and is an obligation upon all of those who have something to say. This wide importance in scope should be a challenge to the Professional Group on Engineering Writing and Speech, but it is one that should not be taken lightly. The problems of this new Group will not be as simple as those of a Group concerned with a clearly limited technical field which extends beyond the range of radio engineering only in that all interested in the field of the Group must belong to it. I am sure that this Professional Group will exert every effort to meet this challenging and difficult situation, and I look forward with the utmost interest for time to reveal the nature of its progress and contributions.